A Weddell Sea polynya located adjacent to the Ronne Ice Shelf, shown in a map of ice concentration derived from passive microwave data at 12.5 km resolution (a) and a visible Landsat image at 15 m resolution (b), on November 26, 2002. Weddell coastal polynyas are believed to be among the main sources of high density and high salinity bottom water that circulates around the globe through the thermohaline circulation. These coastal polynyas are created through the advection of sea ice to the north due to wind, current and other processes causing the creation of ice-free water adjacent to the coastline that gets frozen almost immediately in an extremely cold environment. Persistent wind keeps the ice open for long periods with the result that there is almost continuous growth of sea ice, making the region, in effect, an ice factory. The different shades of gray in the Landsat image represent different stages of growth of the sea ice cover. For example, the darkest gray area corresponds to nilas, a very young type of thin ice which is shown to exhibit little cracks (called leads). Adjacent to this region is a gray area corresponding to a slightly older ice type which is separated from the dark gray area by a narrow light gray area which is likely an area of wind-forced rafting of ice. (Data from the AMSR-E instrument on Aqua and from the ETM+ on Landsat 7.)